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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/763,523

01/23/2004

Kishio Yokouchi

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30764 7590 01/11/2007  
SHEPPARD, MULLIN, RICHTER & HAMPTON LLP  
333 SOUTH HOPE STREET  
48TH FLOOR  
LOS ANGELES, CA 90071-1448

EXAMINER

MCPHERSON, JOHN A

ART UNIT

PAPER NUMBER

1756

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/11/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/763,523

Applicant(s)

YOKOUCHI, KISHIO

Examiner

John A. McPherson

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 24-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/18/05</u>   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I, claims 1-23 in the reply filed on 11/1/06 is acknowledged. The traversal is on the ground(s) that all of the claims can be searched without serious burden. This is not found persuasive because the search for Group I does not include the search for Group II.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 20-30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 11/1/06.

### ***Double Patenting***

3. Applicant is advised that should claim 20 be found allowable, claim 21 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 4-11 and 17-23 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2003/0203315 to Farahi et al. (Farahi). Farahi discloses a process for patterning a waveguide comprising the steps of coating a photosensitive cladding layer on a substrate, exposing the photosensitive cladding layer through a gray scale mask, developing the exposed photosensitive cladding layer to form a semicircular pit structure, coating a photosensitive core layer on the patterned cladding layer, exposing the photosensitive core layer through another gray scale mask, developing the exposed photosensitive core layer to form a circular core structure, and coating and curing a top protective layer (i.e. an upper cladding layer) on the patterned cladding layer and the core structure. See the abstract; Figures 4-9; paragraphs [0010], [0012], [0023]-[0030]; and claims 1, 2 and 5.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,480,764 to Gal et al. (Gal) in view of by US 2003/0203315 to Farahi et al. (Farahi).

Gal discloses a method of manufacturing a waveguide comprising an intermediate connector (corresponding to the second segment of the present invention) and a waveguide component (corresponding to the first segment of the present invention), wherein the steps of forming the intermediate connector comprises covering a substrate N1 with a photoresist material, exposing the photoresist material through a gray scale mask, producing a replica of a lower half of a conical surface in the exposed photoresist material, reproducing the replica in the substrate N1 by ion milling, filling the volume in the substrate with a substrate material N2, placing a layer of photoresist material on the substrate material N2, exposing the photoresist material through a gray scale mask to form the top half of a conical surface, producing the upper half of the conical surface in the substrate material N1 by ion milling, and placing a second layer of substrate material N1 on top of the curved upper surface of the patterned substrate material N2. See the abstract, column 8, line 9 to column 9, line 13 and Figures 6-14.

Additionally, the steps of forming the waveguide component similarly comprise exposing a photoresist material through a gray scale mask, and ion milling the photoresist pattern into a substrate, wherein the waveguide can have an elliptical cross section. See column 9, line 35 to column 10, line 18; and Figures 6 and 15-22.

Furthermore, Gal discloses that the thickness of the processed photoresist material

relates to the intensity of the light transmitted through the mask, whereas if a large amount of light is transmitted then the thickness is very thin, and if the amount of the exposure light is small then the height is large (i.e. the photoresist is a positive type). See column 6, lines 37-43. However, Gal teaches patterning a photoresist with a gray scale mask and then transferring the pattern to an optical material, not directly patterning a photosensitive optical material with the gray scale mask as in the presently claimed invention.

Farahi discloses a process for patterning a waveguide comprising the steps of coating a photosensitive cladding layer on a substrate, exposing the photosensitive cladding layer through a gray scale mask, developing the exposed photosensitive cladding layer to form a semicircular pit structure, coating a photosensitive core layer on the patterned cladding layer, exposing the photosensitive core layer through another gray scale mask, developing the exposed photosensitive core layer to form a circular core structure, and coating and curing a top protective layer (i.e. upper cladding layer) on the patterned cladding layer and the core structure. See the abstract; Figures 4-9; paragraphs [0010], [0012], [0023]-[0030]; and claims 1, 2 and 5.

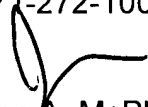
It would have been obvious to one skilled in the requisite art to pattern photosensitive cladding and core layers directly with a gray scale mask, as taught by Farahi, in the method of Gal because it is taught that utilizing layers of photosensitive cladding and core material allows for the exclusion of photoresist material from the process of fabricating micro-optical elements by exposure through gray scale masks.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. McPherson whose telephone number is (571) 272-1386. The examiner can normally be reached on Monday through Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John A. McPherson  
Primary Examiner  
Art Unit 1756

JAM  
1/4/07